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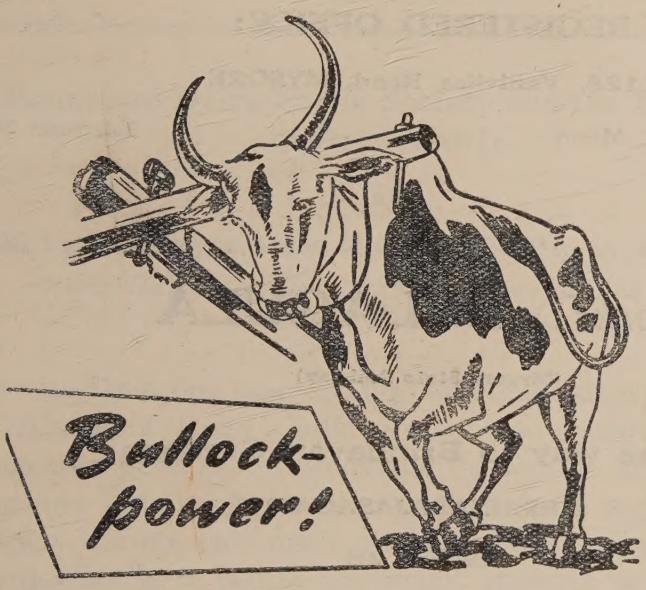

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The Mysore Agricultural Journal

(The Organ of the Mysore Agricultural and Experimental Union)

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The Bangalore Dairy Cattle Society and the Improvement of Dairy Cattle

BY

A. K. Yegna Narayan Aiyer, M.A., N.D.D., Dip. in Agri. (Cantab.)

Retired Director of Agriculture and President, The Bangalore Dairy Cattle Society

It was about one year ago that an organisation under the name of the Bangalore Dairy Cattle Society was started in Bangalore with the object generally of promoting the welfare of the dairy cattle of Bangalore and thereby of improving the milk supply in the city. The Society has not only many practical measures in its programme of activities but is to bestow continuous attention to a consideration of the various means by which its objects can be achieved through both by positive schemes of betterment and by the removal of handicaps and difficulties which exist at present and which may arise from time to time.

Practical Work: The Society's schemes for practical action which have since been set on foot and on which considerable progress has been made during the year comprise four different services, *viz.*, (1) a veterinary or disease control service, the staff of which pay weekly visits to the houses of members, inspect and attend to the health of the animals, (2) an information service, which consists in the publication of a Monthly Bulletin of useful information on dairy matters, both in English and in Kannada, (3) a dry cattle salvage service, which consists of a large farm near Bangalore where dry animals are proposed to be boarded during their dry period, and (4) a breed improvement service which consists of the provision of the breeding bulls of the best dairy breeds, stationed for service to the cows and buffaloes of the city. The creation of facilities for

the supply of cattle feeds and feeding stuffs at reasonable prices, the starting of milk recording by members and such matters have also received attention, but it is about the method of 'breed improvement' that the Society is attempting that I propose to dwell at some length in this article.

In all the studies made at different times of the problem of milk supply in Bangalore and other large cities, the most outstanding fact brought out is the low milk yield of the animals kept. The yield is so low that dairying is hardly a paying occupation and city dairymen are able to carry on only under the most difficult circumstances. Both men and animals have to live in mean, highly insanitary quarters, animals have to be kept on the barest minimum of proper feeds, adulteration and other malpractices have to be resorted to and all the time the men make only a hand-to-mouth existence, if not perpetually in debt. Rules regarding the better housing of cattle, the prevention of adulteration and so on, recommended and often enforced in the interests of public health, only have the effect of driving the men out of the business, forcing them to resort to further subterfuges, or to a considerable enhancement in the price of milk. Unless a better type of milking animal is kept, the dairymen's profession in the cities will always remain uneconomic and the milk supply far from satisfactory; this may be taken to be the general conclusion.

What can be done then in order to give the city dairymen a better milking animal? Two courses are usually recognised for improving the breed, *viz.*, (1) the crossing of the local breed with foreign breeds, *i.e.*, English, Scotch or Continental Europe, such as Shorthorn, Ayrshire or Holsteins, and (2) the improvement by selection among the local breeds themselves carried out over many cattle generations. In practice, so far, in the past it is the former method that has been adopted to some extent; the improvement effected is rapid, easy and almost spectacular. The cross-bred progeny are so superior in milk yield to their mothers, that the method was definitely recommended at one time and pure-bred sires of such breeds were stationed for service in certain centres. It was, however, found as the result of further experience that this striking increase in milk yield was not passed on beyond the first generation crosses and that furthermore the animals with foreign blood in them were extremely susceptible to many of the cattle epidemics of India, which in their case, proved more fatal than in the case of local breeds. The male progeny were found not only more delicate as working animals but also unsuitable on account of their humpless character. Without a strict control of

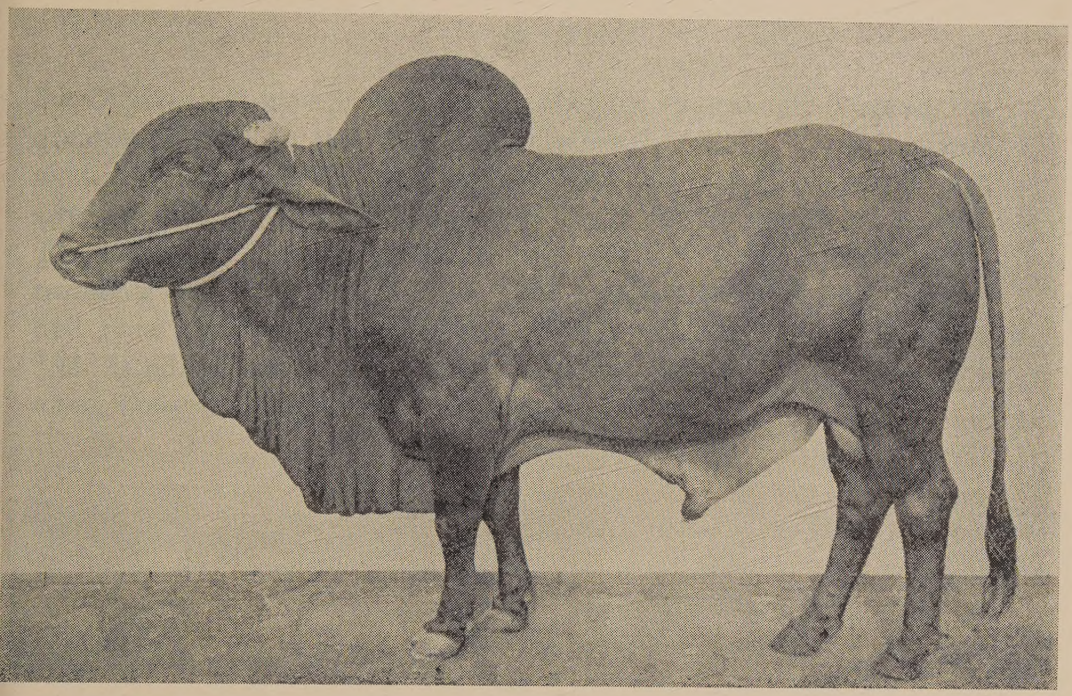
breeding there has also resulted a fairly large population of non-descript 'mongrel' or mixed cattle with the desirable characters of neither breed. For these reasons the method has been definitely abandoned at least in authoritative quarters but despite its defects it enjoys some popularity among city dairymen, solely because the local cows are such poor milkers.

The second method of improvement has all the advantages of suitability to the local conditions, and it should be possible to raise the milk yield of the average animal to the level of the best that may be found among the breeds by suitable breeding and feeding. This, however, is a piece of work which has to be carried out over a long period of time, perhaps for some thirty or forty years, and under a definite and well-controlled policy by Government breeding farms. The extent of the improvement will be dependent upon and limited to the milk yield of the best animals of the breeds, and if this should be fairly high then it will justify all this patient work of many years. Though the Mysore breeds of cattle are outstandingly of the draft type, there are sub-types in which the cows are moderately good milkers also and it should be possible through this long-range work to effect a definite improvement of the average animal. The method suffers from the drawback of being very slow and for practical immediate needs, it will be desirable to adopt some other method, provided it is not open to any serious objection. Now, this method, which may perhaps be described as a compromise, consists in the introduction of and breeding together with the best among the Indian dairy breeds. This does not suffer from the drawbacks that have been pointed out above in the case of the foreign breeds; there is not the same susceptibility to disease, nor the unsuitable male stock, nor again the mixing of widely differing characters. This method, therefore, effects a great improvement of the milk yield without introducing any serious disability. This method of breeding with superior Indian milking breeds is being carried out in a number of places and, it is reported, with encouraging results. The Bangalore Dairy Cattle Society has made a beginning along these lines.

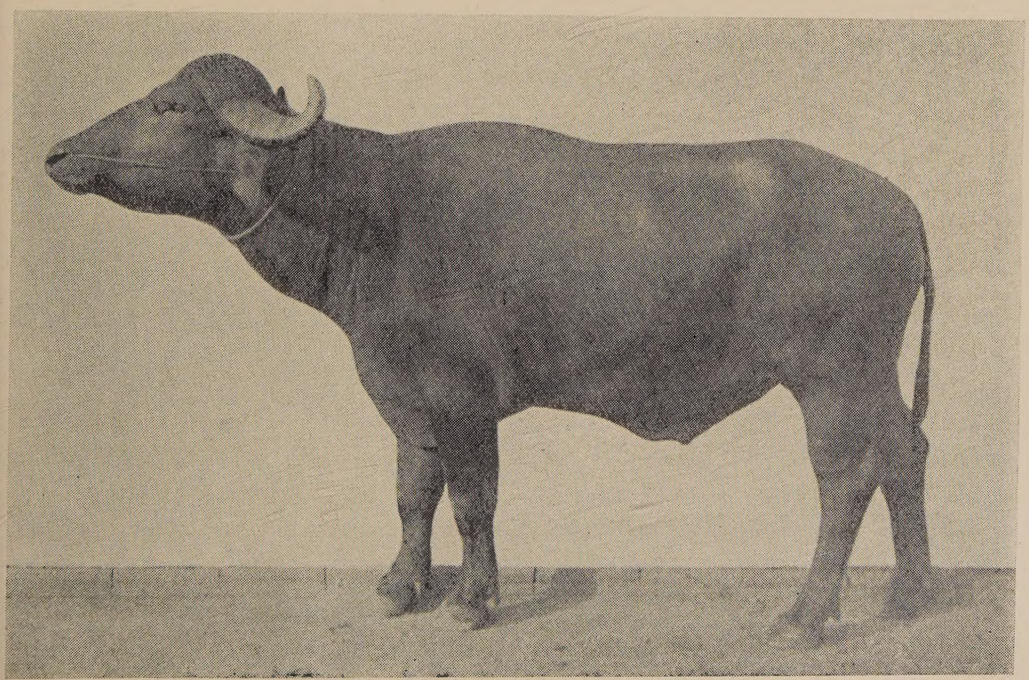
The breed selected for this purpose, the Red Scindhi, which is a very good dairy breed, has been found very adaptable to varying conditions of climate, and has been largely recommended. In pursuance of a scheme by the Government of Mysore under which breeding bulls of the draft breeds, Hallikar and Amrit Mahal, are stationed in Veterinary Hospitals, the Society approached the Government and requested that similar encouragement may be given in respect of

dairy breeds and that a Scindhi bull may be kept for service. The Government considered the request very sympathetically and sanctioned the stationing of a bull. The Society is to pay a sum of Rs. 300 per year towards its maintenance, in return for which the Government has ordered that free service may be given to the cows of members, while a fee of Rs. 3 per service is charged to non-members. With the kind assistance of the Director of Dairy Research, Mr. Zal R. Kothawala, the Society was able to secure a very good bull. This bull, "Warrior", is a pure bred Scindhi, reared in the Imperial Institute of Dairying and Animal Husbandry, Bangalore, and comes of a good milking strain. He is very popular, perhaps more popular, than is good for him. Since September 1942, when he arrived at the Station, up to the end of January 1943, he has covered 76 cows, 46 of which belonged to members and the remainder to non-members. It is the intention of the Society to arrange for a Show of the calves born to this bull sometime about the end of this year, in order to draw more public attention to the work. If a few more bulls of the kind should be stationed in Bangalore for the use of the pure Scindhi cows and of the local cows—and the Society will strive to bring this about—it may be expected that very marked improvement in the milking qualities of the cows in Bangalore may result in the course of some six or seven years.

The Society has furthermore attempted to effect improvement on somewhat similar lines in the case of buffaloes. It is often stated that buffalo is really the dairy animal of India and that we should look to the buffalo more and more for a satisfactory supply of both milk and other dairy products. The experience in Bangalore quite bears out this view and the number of buffaloes kept in the city is steadily on the increase; indeed, the Census Commissioner reports that while there has been reduction in the number of cows kept in the city, buffaloes have considerably increased. The local breeds of buffaloes are poor milkers compared with the Murrah type, which gives two or three times as much of milk as a good local buffalo. The city milkmen have already shown their great preference to this breed and there is quite a respectable number kept in the city. In order to help in improving the local types by breeding with the "Murrahs" and for the benefit of those keeping pure "Murrahs" also, the Society was able to persuade the Government to station a Murrah buffalo breeding bull along with the Scindhi bull for service. It is a very pleasing fact to note that



Red Scindhi Breeding Bull "Warrior" stationed for service in the Bangalore City Veterinary Hospital



"Murrah" Buffalo Breeding Bull kept for service in the Bangalore City Veterinary Hospital

the Government have at every step in these endeavours evinced the greatest interest in the work and responded liberally to the requests made by the Society. The buffalo bull kept for service was also selected with great care, though it is not a regular pedigreed animal. The service is charged for at the rate of Re. 1 per service, for both members and non-members; and the number of coverings by this bull from the month of September 1942, up to the end of January 1943 is 83. Considerable improvement may be looked for, as work along these lines expands in the city.

Groundnut in Mysore

BY

K. Gopala Iyengar and R. S. Iyengar

II

Though groundnut has been in cultivation in the State from a long time, its successful establishment as a field crop is very recent. Buchanan,[6] describing the cultivation of garden lands at Siddlaghatta in the year 1800, speaks of maize and groundnuts being raised as an intercrop along with turmeric. "Some persons with the turmeric mix the leguminous plant called *Arachis hypogæa* which requires a longer time to ripen than maize does." Writing as late as 1897, Rice[7] merely mentions groundnut as one of a list of crops cultivated on garden lands. It is obvious that till the very close of the last century, groundnut was sparingly cultivated on garden lands, solely for meeting the local demand for edible purposes. In 1886-87, seed from Mozambique Coast was introduced to Pondicherry by the French. This, under the name of Mauritius, spread very rapidly in the Province of Madras. On account of its shorter duration and heavier yield as compared with the local variety under cultivation, the introduced variety completely replaced the local in a very short time. Barber[8] says that the spread of the Mauritius variety caused something like a revolution in the production of groundnuts in Madras. The natural spread of the Mauritius variety into Mysore, also brought similar remarkable effects in its wake. From a cultigen of garden lands, groundnut became a field crop and the area under it began to expand considerably.

Figures of acreage under groundnut in the State are available from 1916 onwards. Prior to this, the acreage under this crop used to be merged in the area under oil-seeds. From the opening years of the present century when groundnut became a field crop, the area under it has gradually expanded till in 1916-17 when over seventy thousand acres were under this oil-seed, Coleman[9] estimates, "If the

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[6] Buchanan, Francis: *A Journey from Madras through the Countries of Mysore, Canara and Malabar*, 1807, Vol. I. Balmer & Co., London.

[7] Lewis Rice, B.: *Mysore*, 1897, Vol. I. Archibald Constable & Co., London.

[8] Barber, C. A.: "The groundnut crops growing near Panruti in South Arcot," *Dept. of Land Records and Agri., Madras*, Vol. II, *Bull.* 38, 1900.

[9] Coleman, Leslie C.: "Note on the possibilities of increasing Agricultural Production in Mysore," *Mys. Econ. Jour.*, 1919, Vol. 2, pp. 72-97.

export and import statistics are to be trusted the area under groundnut in the beginning of the decennium 1905-15 must have been very low, there must also have been a sudden rise in the area about 1910 continuing till the outbreak of the War, when a fall probably took place. In 1912-13 the area probably amounted to at least 1,00,000 acres. On the whole, I think we may take the average area under groundnut for the decennium to have been about 50,000 acres.

With the return of normal conditions after the War a very rapid expansion of the area under this crop may be anticipated. I think we may safely predict an extension to five times the average area for 1905-15." At present, the State has an average area of over two lakhs of acres under this crop, valued at over six million rupees. Thus within a short period of forty years, the production of groundnuts, one of the youngest agricultural enterprises in the State, has risen to the position of being the premier cash crop of the dryland cultivator.

The area under this crop and the wholesale price in the market from 1916 onwards is to be found in the accompanying table.

Year	Acreage	July prices in Bangalore in Rs. per unit of 210 seers of unshelled nuts
1916—17	77,305	9—12—0
1917—18	67,775	9— 6—0
1918—19	46,118	10— 0—0
1919—20	53,034	26— 0—0
1920—21	73,071	22— 8—0
1921—22	86.120	15— 8—0
1922—23	90.114	21— 0—0
1923—24	1,02 345	18— 8—0
1924—25	1,27,583	15— 8—0
1925—26	2,13,095	21— 8—0
1926—27	1,95,096	18— 3—0
1927—28	2.54.405	17— 9—0
1928—29	3,10,362	17—11—3
1929—30	3,23,738	11— 2—3
1930—31	3.13,912	9— 2—3
1931—32	2,70,936	4—12—3
1932—33	2.83,586	7— 4—0
1933—34	2,54,096	6— 8—0
1934—35	1,63,211	6— 0—0
1935—36	1,87,471	11— 0—0
1936—37	1.98 086	10— 0—0
1937—38	1,98 188	7—12—0
1938—39	2,14,669	6— 8—0
1939—40	2,21,946	9—13—0

The effect of price on acreage is indicated by the graph in Fig. 3.

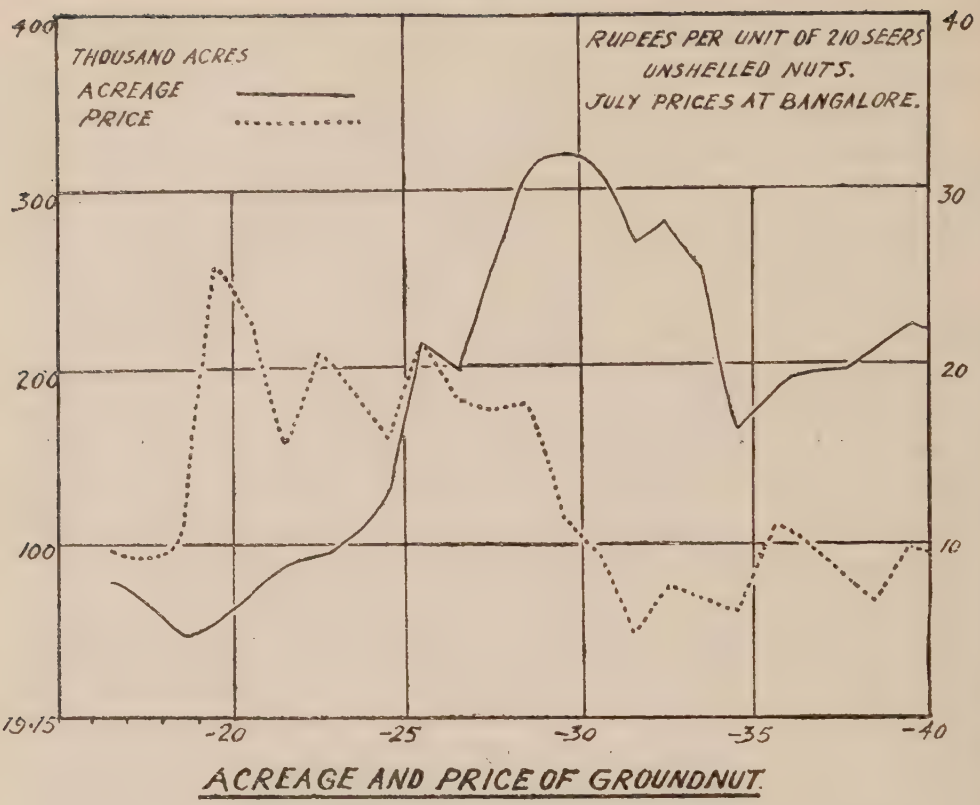
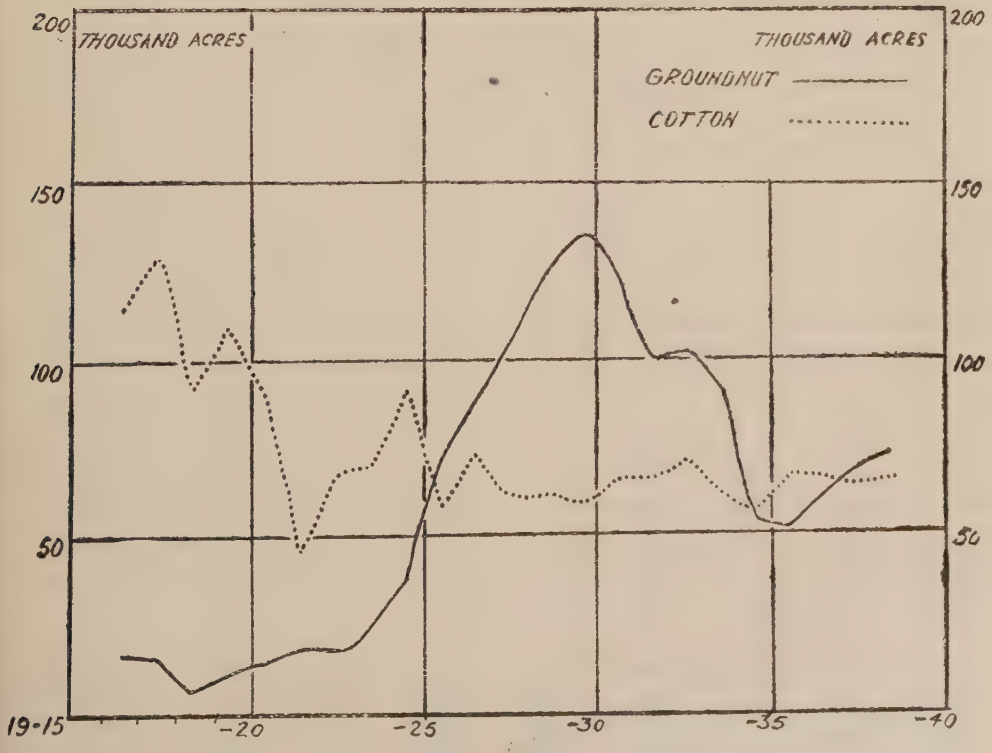


FIG. 3. Acreage[figures are indicated to the left and prices on the right side

The acreage generally fluctuates in sympathy with the rise and fall of the market price. This relationship while being not very close in earlier years, is particularly noticeable since 1930 onwards. In 1914-15 the wholesale unit price in Bangalore was Rs. 8. This gradually advanced to Rs. 10 during 1915-18 and thereafter took a sudden jump to Rs. 26 in 1919. During this period, the average area under groundnut used to be about 61,000 acres. Between 1920-28 the price fluctuated between Rs. 15-8-0 to Rs. 22-8-0, being on an average about Rs. 18. In this period of stable high prices, the acreage steadily expanded till it was over three lakhs of acres in 1928-29. Though the price began to decline from 1929 onwards the three seasons 1928-29 to 1930-31 witnessed record acreages of over three lakhs in the State. From 1930 to 1940 it has been a period of low prices, and the area has dwindled down to just over two lakhs of acres. Low prices realized is not the only factor responsible for this recent decline in acreage. Among other causes, is the lack of extensive financing of the crop by export agents and decorticating establishments. The paucity of an adequate number

of expellers is also another contributing factor, since a large number of expellers exercise a stabilizing influence on the acreage. Lack of an established trading in "Future" market is also partly responsible for the recent fall in area under cultivation.

Since 1924 onwards, there has been a considerable expansion of the area under groundnut in the State. While high prices has been the main factor actuating this expansion an equally important contributing factor has been the successful introduction of short-season varieties into cultivation at this juncture. These short-season varieties were the erect, small Japan and Spanish, the latter being the more important. This increase in area amounts to over two lakhs of acres in extent. The expansion has been considerable in the black-cotton soil areas of the State. In these areas groundnut is seriously competing with cotton as a cash crop. The extent and seriousness of this rivalry can be gauged by the accompanying table and the graph in Fig. 4.



AREA UNDER COTTON AND GROUNDNUT IN THE CHITALDROOG DISTRICT.

FIG. 4

Season	Chitaldrug Dist. Average area under Cotton and Groundnut	Proportion of	
		Cotton	Groundnut
		%	%
1916—17 to 1919—20	1,23,292 acres	89	11
1920—21 to 1927—28	1,07,696 ,,	65	35
1928—29 to 1930—31	1,92,044 ,,	33	67
1931—32 to 1939—40	1,42,889 ,,	46	54

In other parts of the State, fresh land has been brought under plough and sown with horsegram, the area previously under horsegram being in most cases shifted over to groundnut. The introduction of early varieties has to some extent enabled the cultivator to introduce double cropping in areas ordinarily under *hain* cultivation. A first crop of early or *mungar* groundnut is frequently followed by a subsequent late or *hingar* crop of horsegram, jola, tobacco or transplanted ragi. Intercropping of groundnut with other dry crops has also contributed to this increase in area. Finally on account of its higher monetary return, groundnut has to some extent replaced less remunerative minor crops.

The production of groundnuts is mainly concentrated in the northern and eastern borders of the State (Fig. 5). These areas adjoin the groundnut producing districts of Bellary, Cuddapah and North Arcot of Madras Province. A small portion in Harihar and Honnali taluks form the rim of the groundnut area in Dharwar District, situated in the Province of Bombay. A minor concentration in the south-east of Mysore forms an extension of the groundnut area of Coimbatore District. In general, it may be stated that the production of groundnuts in Mysore, merely constitutes an extension of the same enterprise found on such a vast scale in the adjoining Province of Madras.

The State is divided into nine districts for purposes of administration. Of these, the district of Mandya has been recently carved out as a separate unit out of Mysore. In the following analysis of the groundnut area in the districts, Mysore and Mandya have been treated as a single unit for purposes of convenience:—

FIG. 5

Year	Bangalore	Kolar	Tumkur	Mysore and Mandya	Hassan	Shimoga	Kadur	Chitaldrug
1916—17	5794	10059	38041	5333	1142	39	—	16897
1917—18	6980	10252	24388	7547	2375	31	871	15331
1918—19	5050	10336	16166	4907	2442	171	26	7020
1919—20	4711	10812	15634	6519	3925	108	96	11229
1920—21	5737	17998	19556	12619	1655	769	68	14669
1921—22	7167	18721	27488	11527	1670	601	54	18892
1922—23	6569	20508	30979	11431	1480	1119	109	17919
1923—24	5514	17768	38945	11443	1569	1078	291	25737
1924—25	6149	26777	36652	11502	1659	5074	323	39447
1925—26	6613	69895	37744	13639	1953	7180	1085	74986
1926—27	7180	33766	39378	13639	3345	8198	1169	88421
1927—28	7485	68463	49435	18579	2077	9764	3828	94774
1928—29	10370	77812	57034	23274	1736	11384	4472	124280
1929—30	13655	62841	62354	25430	1981	15017	5577	136883
1930—31	12261	57762	64328	28456	3008	15729	5761	126607
1931—32	16447	41958	64051	24194	3329	11976	8592	100382
1932—33	9506	38788	75429	26636	3682	18049	7295	104201
1933—34	8809	39177	64469	25196	3795	17956	2668	92026
1934—35	7463	25297	36917	18162	3527	14465	2630	54750
1935—36	7036	32867	55397	15117	3819	17260	2668	53307
1936—37	7138	37602	48185	17380	3739	17795	2879	63368
1937—38	7870	42100	36511	15950	3872	19248	2774	69863
1938—39	8727	45357	43958	16316	2305	21765	2310	73931
1939—40	9032	47106	38849	19240	1778	22096	2186	81659

The relative proportion which the area in the districts bear to the total acreage is delineated in Fig. 6. The three districts of Chitaldrug, Tumkur and Kolar have in between them over seventy-six per cent. of the total area. Mysore, Mandya and Shimoga

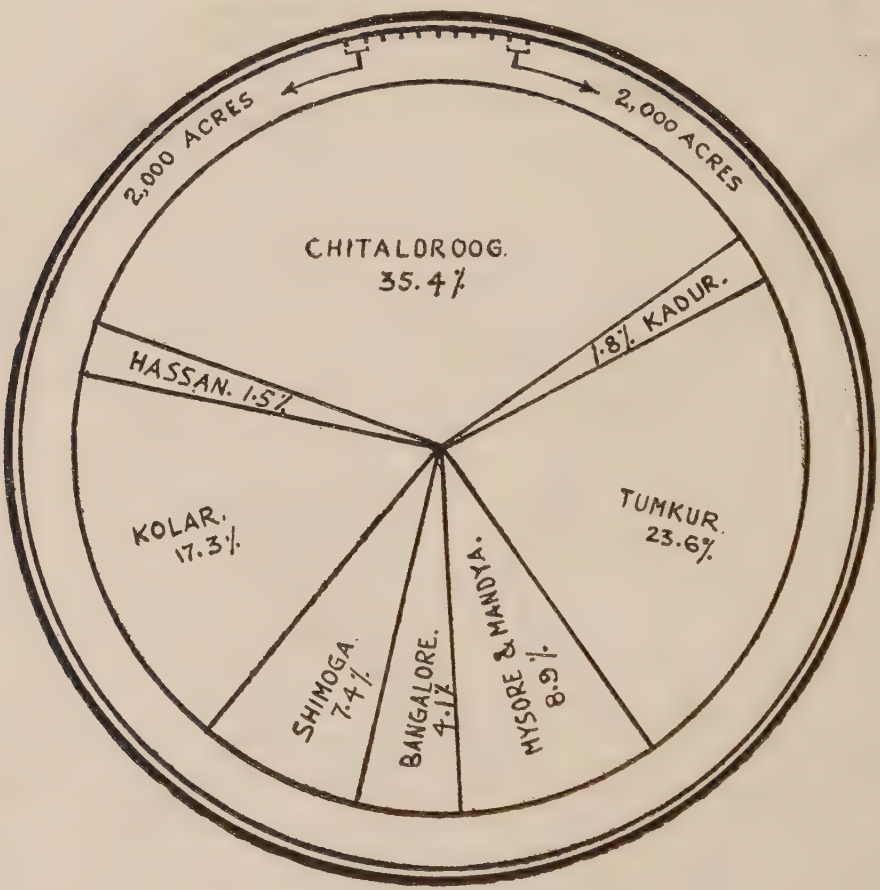
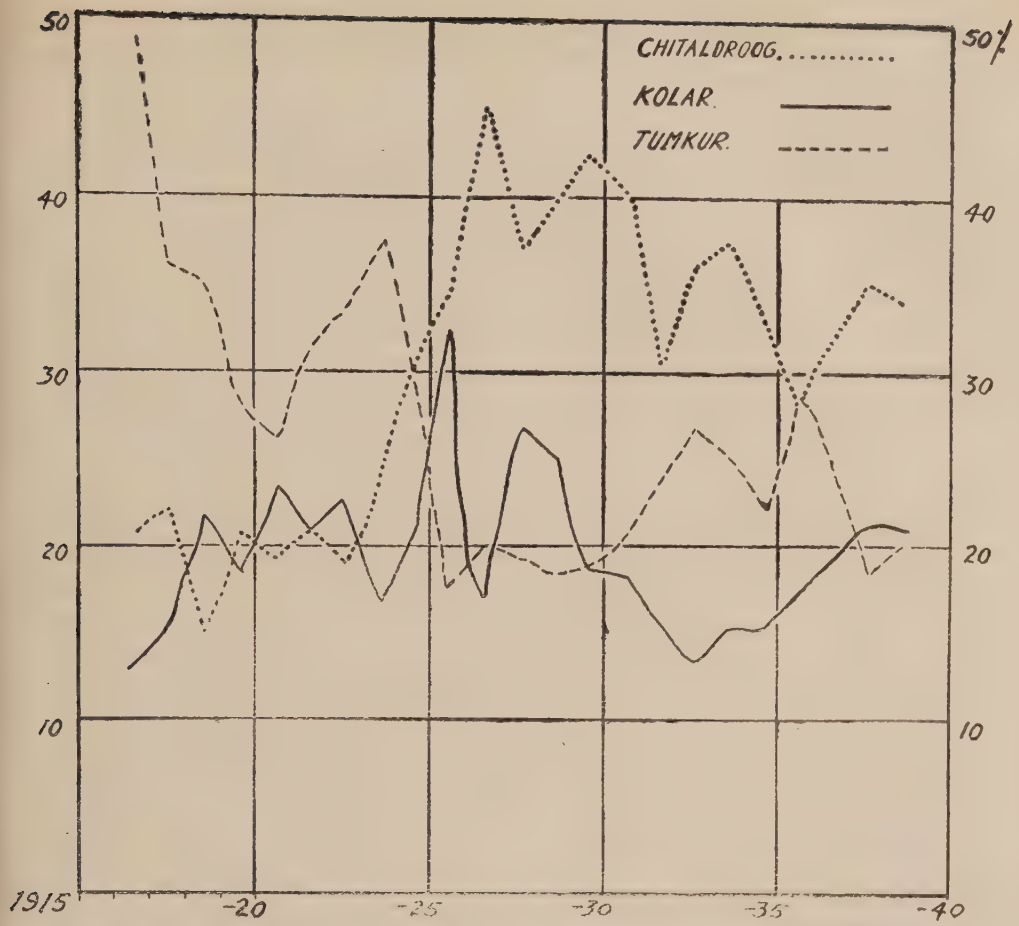


FIG. 6. Share of districts in the acreage under groundnut

account for over sixteen per cent. Just over seven per cent. of the acreage is shared by the districts of Bangalore, Kadur and Hassan.

Approximately three-fourths of the area under groundnut is found in the districts of Chitaldrug, Tumkur and Kolar. The share of these main producing regions in the total area is shown graphically in Fig. 7. The contribution of Kolar has been fairly steady, fluctuating around twenty per cent. of the area in the State. Tumkur formerly in the lead, has steadily declined in importance and is now eclipsed by Chitaldrug. This is not due to any actual reduction of the acreage in Tumkur; but is the direct effect of the considerable expansion of the area under groundnut in the Chitaldrug District.



AREA UNDER GROUNDNUT IN THE MAIN PRODUCTION CENTERS AS PERCENTAGE OF THE TOTAL AREA

FIG. 7

Bangalore District has on an average about 9,000 acres under groundnut. The distribution of the crop is fairly even, Doddaballapur having the largest area. Production is not of any commercial significance, as all the quantity produced goes to meet the local demand for edible purposes in the form of nuts in shell. On an average about 3,000 acres are under this crop in the district of Kadur. The crop is very unevenly distributed, Tarikere and Kadur having the bulk of the area. Though the quantity produced is small, much of it finds its way to Davangere market on account of the direct rail communication. The area in Hassan is slightly less than that in Kadur and in distribution equally unsatisfactory. Arsikere is the leading centre of production and the direct rail connection facilitates

the movement of the produce to the Davangere market. In the groundnut areas of Hassan and Kadur, cotton is an old and established cash crop. The agencies that handle the market for cotton are also interested in the trade in groundnuts. This identity of interests happens to be another reason for the movement of the produce from these areas to the central market at Davangere.

Usually over 20,000 acres are under this crop in Mysore and Mandya and the distribution of this is fairly satisfactory. Malavalli, Gundlupet, Chamarajanagar and T. Narasipur have appreciable acreages. Nanjangud and Maddur have become of some importance of late. After meeting the local demands, most of the produce of this region appears on the central market at Mysore. An area of nearly 20,000 acres is found in Shimoga District. The distribution is extremely uneven as production is practically confined to two taluks. Honnali with 12,000 acres and Channagiri with about 7,000 acres are the main centres of production. About nine-tenths of the produce moves direct to the markets at Davangere and Harihar. Shimoga had no significant acreage under groundnut prior to 1924-25. From then onwards, the area has been gradually expanding in contrast with other regions in the State; where, of late due to low prices there has been an appreciable fall in the area under groundnut. Honnali and Channagiri grow the erect short-season varieties as an early or *mungar* crop. These varieties are preferred by the oil concerns in Davangere. The average yield per acre is also high due to the favourable rainfall. This crop appears on the market one to two months earlier than the general crop of the Chitaldrug District. The fact that Channagiri and Honnali are the two taluks in Shimoga that also produce cotton is worthwhile bearing in mind. It is these favourable circumstances that have made the acreage in Shimoga not only remain steady through a period of falling prices, but also increase in extent.

An area of over 40,000 acres is under groundnut in Kolar. In 1928-29 this district had as high an acreage as 77,812 acres. The distribution of the crop is fairly uniform. Bagepalli, Gudibanda, Goribidanur and Chintamani have appreciable acreages. Even taluks of second-rate importance like Chikkaballapur, Mulbagal and Bowringpet have an acreage of about 2,000 or more. Except for the local demands, all the produce is of commercial significance. Usually, Tumkur has an area of 10,000 acres excess over that of Kolar. Its distribution while being fair is not so satisfactory as that of Kolar. Madhugiri and Pavagada each grow groundnut to an extent of 10,000

acres or more, Koratagere and Gubbi about 5,000 acres each. As in the case of Kolar, the bulk of the produce appears on the wholesale market.

Chitaldrug is the foremost groundnut-producing district in the State having an average area of 78,000 acres. Among all the districts it is only in Chitaldrug that the crop is uniformly distributed in all the taluks. During the peak years of production when the acreage in the State used to be over three lakhs of acres, this district alone had an area of a lakh and thirty thousand acres. In 1929-30 Davangere, including Harihar, returned a record figure of 59,907 acres or 18.5 per cent. of the acreage in Mysore for that year. The area in the taluks during 1930-31 to 1939-40 was as follows:—

Year	Chitaldrug	Challakere	Hiriyur	Holalkere	Davangere and Harihar	Jagalur	Molakalmuru	Hosadurga
1930—31	13248	12520	14838	13110	47997	17450	6969	475
1931—32	11295	13200	14642	10295	21941	17750	7799	460
1932—33	11783	15400	13823	9896	26008	18320	8366	605
1933—34	9531	14800	8624	9860	27987	11580	8938	706
1934—35	6278	6560	403	7800	20347	10250	2234	878
1935—36	6750	6650	150	7127	20637	8608	3500	885
1936—37	5820	5260	2046	6540	29596	9980	3450	676
1937—38	8500	6575	66	6833	33774	9990	3250	875
1938—39	9300	7826	4655	6886	33925	10360	3525	454
1939—40	9300	9675	2964	6950	37250	10870	4250	400

After meeting local demands, the produce appears on the markets at Chitaldrug, Davangere and Harihar.

The varieties in cultivation can be grouped under two classes, the erect and the spreading. In commercial parlance the erect varieties are termed as Natal or Khandesh, and the spreading ones as Coromandel. In the erect varieties the plant is upright and the pods are borne in a cluster around the roots, which facilitates the harvest operations. In spreading varieties the axis is erect, but all the side branches trail along the ground, the pods being borne all along on the lower side of these branches within a radius of one or two feet. This results in the harvest being costly and laborious as the entire field has to be turned up for gathering the pods.

The erect or bunch varieties have a duration of 3½ to 4½ months, whereas the spreading ones take nearly five months or more to ripen. The short duration types give a lower return per acre than the long duration ones. Bunch types usually bear two-seeded pods of small to medium size with a pronounced constriction, having a thin shell and small round seeds of a light rose hue. The spreading varieties bear medium pods of two to three seeds, with a less pronounced constriction and thicker shell, the seeds being oval and light red in colour. The small-seeded bunch types have a slightly higher oil content than the larger seeds of Coromandel type. The late spreading varieties occupy more than half the area under groundnuts in the State, and are extensively grown in Bangalore, Tumkur and Kolar. The early erect types are raised in Chitaldrug, Shimoga and Kadur. In Mysore, Mandya and Hassan, both types are under cultivation.

The erect varieties occupy an area slightly less than half in extent of the entire acreage under groundnuts. After 1924, most of the extra land brought under this crop has been occupied by these short-season erect varieties. The most popular variety in this group is Spanish, which comes to maturity in about four months. Small Japan is very similar in habit and maturity to Spanish, but the constriction of the pods is less pronounced and the seeds are red. Valencia, having a duration of about 3½ months is grown to a very limited extent on account of its extreme earliness. It is commercially a very undesirable type, bearing medium-sized smooth pods, having a very thick shell and dark-red seeds. Since 1920, the improved variety, H.G. 1, is being popularised. It takes nearly 4½ months to ripen, and its pods and seeds are similar in appearance to those of spreading types.

Of the spreading or runner types mention has already been made of the old local variety grown in garden lands. This, known as Mysore Local, has been completely replaced by Mauritius as a commercial type. But the local type is still grown to a very limited extent, on account of its long, thin and highly reticulated pods, which fetch a premium of 40 to 50 per cent. over ordinary types. It is a very late variety requiring six months to come to maturity, is a poor yielder but is preferred by fastidious tastes for edible purposes. Mauritius or its local variant known as Sogatoor is the chief commercial variety. This has recently got considerably mixed up with West African seed known as Senegal or Pondicherry. The pods of Senegal are slightly larger than those of Mauritius and contain a high

proportion of three-seeded nuts. A local strain of this, bearing larger pods containing kernels of a pronounced nutty flavour is known as "Badami (almond) Kalle Kayi".

Indian trade recognises four classes of nuts known as Bold, Coromandel, Peanuts and Red Natal.[3] Trade in Mysore recognises only two of these, Coromandel and Peanuts. Bold types are produced by spreading varieties; the nuts are large, have a very thick shell and the kernels are of large size. Trade in this is only for edible purposes and is practically confined to the Bombay market. The local spreading varieties, Mysore Local and "Badami Kalle Kayi", may be placed in this category. Though Mysore produces nuts which are classed under Red Natal (Small Japan), this is not recognised as a separate class in the local market. Small Japan is sold as Peanuts, and in the class Coromandel a small margin is allowed for admixtures of Spanish and Small Japan.

The spreading varieties, Sogatoor, Mauritius, Pondicherry and Senegal are classed as Coromandel. Pods of erect varieties like Valencia and H.G. 1 also come under this group. Karad is an other equivalent for Coromandel in the Bombay market. Spanish is traded as peanuts and is also known otherwise as Natal or Khandesh.

(*To be continued*)

[3] *Report on the Marketing of Groundnuts in India and Burma*, 1941. Government of India, Simla.

Grow More Pulses

Togari (*Cajanus indicus*)

Togari is one of our chief pulses. This is one among those foodstuffs which we are importing to the value of more than a crore of rupees. I have grown this in several fields having black, red and stony soils. In our area, *Kar* ragi is sown in *Bharani* rains, admixed with this crop. *Togari* is grown in rows six to eight feet apart. It is not grown as a pure crop.

Last year, I arranged to sow six seers of *Togari* on 8-5-1942, in six-feet rows in an acre of stony soil. The seeds began to germinate on 12-5-1942, and all the seedlings appeared above the soil by 20-5-1942. A local cultivator was passed in the ragi rows on 23-5-1942. The field was again harrowed on 31-5-1942, when the surplus *Togari* seedlings were removed. This cultivation helped both the crops simultaneously.

Ragi which was of the E.S. II type was harvested on 25-9-1942, by which time *Togari* was mostly in flowers.

Land between the rows of *Togari* was ploughed with the country plough on 3-10-1942, 11-10-1942 and 18-10-1942. After that the plants began to put on extra growth and no further cultivations were given.

Thus it may be observed that *Togari* takes twelve days from sowing to seedling. The land is intercultivated with harrows between fifteen to twenty-five days, flowers appear after four and a half months. Again the land is intercultivated with country ploughs between five to five and half months. At seven and half months the crop is harvested.

This crop was harvested on 23-12-1942. The stalks were well-dried, heaped and threshed after a week. In all 591 seers of *Togari* grain and two cartloads of chaff were obtained. This bye-product is eaten by cattle with relish.

In my experience *Togari* crop is easily grown and it must be said that it grows better in stony soil than in black or red soils.

P. K. Puttarajappa, Periyapatna.

Proceedings of the 23rd Annual General Meeting held in the Premises of the Agricultural Offices at Bangalore, at 4 p.m., on 18th January 1943

The General Meeting was called at 4 p.m. Rajasevaprasakta T. G. Rama Iyer presided.

The Secretary presented his report as follows:—

This meeting was generally being held earlier in the season, but for various reasons it had to be fixed as it has been now. The food-production problem, as our members know, is engaging the attention of most of the important officers.

Early in the October month our President, Rajasevaprasakta T. G. Rama Iyer, Director of Agriculture, went on leave preparatory to retirement.

We have had a continued increase in our membership for the last four years as the following figures indicate:—

Date	Members taking the Kannada Journal	Members taking the English Journal	Total
11—11—1939	30	105	135
1—11—1940	47	123	170
21—12—1941	104	150	254
26—12—1942	146	178	324

When, however, we look at the number of schools and village panchayats subscribing to our *Journal,* the numbers are rather low.

In the Report of the last year duly adopted by the General Body several points were submitted for consideration. I may be permitted to make a brief mention of them for finding ways and means.

(1) The holding of Field-Days in the Moffussil.

(2) Space for the Union with a view to maintaining a well arranged library, a reading room and a display of economic charts.

(3) Formation of Affiliated Associations, and

(4) Co-operation of our Veterinary friends.

With this I beg to present the Accounts audited by the Certified Auditor:—

Income and Expenditure Account for 1941–42

Expenditure	Rs.	A.	P.	Income	Rs.	A.	P.
To Establishment ..	1,780	3	0	By Admission Fee ..	128	0	0
,, Printing ..	1,390	2	0	,, Membership Fee ..	762	0	0
,, Postage ..	177	10	0	,, Subscription ..	431	4	6
,, Books and Stationery ..	43	12	6	,, Associateship Fee ..	8	2	0
,, Auditor's Fee ..	25	0	0	,, Advertisement Charges ..	170	4	0
,, Miscellaneous Expenses ..	3	10	0	,, Miscellaneous Receipts ..	25	0	0
,, Annual Field-day and General Meeting Expenses ..	179	13	6	,, Postage Recovery ..	9	4	0
,, Depreciation ..	18	6	0	,, Donation Received ..	11	0	0
				,, Government Subvention ..	2,000	0	0
				Total ..	3,544	14	6
Total ..	3,618	9	0	By Excess of Expenditure over Income ..	73	10	6

Balance Sheet as on 30th June 1942

Liabilities	Rs.	A.	P.	Assets	Rs.	A.	P.
Fund ..	1,253	10	9	Cash : On Hand Rs. 1 6 0			
Subscriptions received in advance:				In S. B. ,, 451 9 0			
1. Members Rs. 98 3 0					452	15	0
2. Subscribers ,, 100 3 0				Stamps ..	9	4	9
	198	6	0	Furniture :			
Sundry Creditors ..	277	5	0	Opening Balance Rs. 244 11 0			
				Less Depreciation at 7½ % ,, 18 6 0			
					226	5	0
				Library ..	261	15	0
				Arrears Outstanding :			
				1. Members Rs. 313 8 0			
				2. Subscribers ,, 73 6 0			
					386	14	0
				Sundry Debtors ..	86	4	0
				Excess of Expenditure over Income :			
				Opening Balance as on 1-7-1941 Rs. 232 1 6			
				Add Amount transferred from Income and Expenditure Account for 1941–42 ,, 73 10 6			
					305	12	0
Total ..	1,729	5	9	Total ..	1,729	5	9

Certificate.—I have examined the above Balance Sheet with the Books and vouchers maintained in the Union and have obtained all the information and explanations required. In my opinion, such Balance Sheet has been drawn up correctly and exhibits a true and correct view of the state of affairs of the Union as on 30th June 1942, according to the best of my information and the explanations furnished and as shown by the books of the Union. This Certificate is subject to the remarks made in my separate report of date.

Bangalore,
13*th November* 1942.

(*Sd.*) S. A. Gangadharasastry,
M.A. (Litt.), LL.B., M.A. (Com.), &c.,
Government Certified Auditor.

The statement of Estimated Receipts and Expenditure for 1942-43, as provisionally approved by the President was then placed before the Body.

Estimated Receipts		Estimated Expenditure	
	Rs.		Rs.
1. Government Subvention for the year 1942-43 ..	2,000	1. Printing Charges :	
2. Subscriptions to be received from about 430 subscribers and members on rolls as on 1-7-1942 at Rs. 3 per member or subscriber ..	1,290	(1) English Journal 4 issues at Rs. 130 per issue ..	520
3. Advertisement charges as per existing contracts with advertisers ..	235	(2) Kannada Journal 12 issues at Rs. 52-8-0 each issue ..	1,150
4. Miscellaneous receipts such as interest, miscellaneous sales, associateship fee, etc. ..	40	2. Establishment Charges for 12 months including Dearness Allowance ..	2,017
		3. Postage and Stationery ..	175
		4. Annual Field-Day Expenditure ..	100
		5. Miscellaneous expenditure such as Auditor's fee, etc. ..	50
Total ..	3,565	Total ..	3,492
		Balance ..	73
Grand Total ..	3,565	Grand Total ..	3,565

N.B.—Admission fee that may be realised from new members has not been taken into account.

After recording the Secretary's report and Estimates for 1942-43, Amendments to Constituion and Rules were taken up.

Mr. S. L. Narasimhia suggested a number of Amendments. A number of those were passed causing the following changes in the Constitution and Rules.

Original	*Amendment*
Associates—Clause 6.	This Clause was deleted.
Miscellaneous—Clause 15, Item (4).	The words "associates or" in this Clause were deleted.
Appendix I— Affiliated Associations : Present reading.	As altered.
(1) At the time of the application, the Association shall have at least ten members on its rolls.	At the time of the application the Association shall have at least ten members on its rolls within such distance of one another as to make their daily meetings possible.
(3) Each such association shall pay to the Union an admission fee of Rupees ten and an annual contribution of not less than Rupees ten.	Each affiliated association shall pay to the Union an annual contribution of not less than Rupees five in advance.
(4) Each affiliated association may delegate two of its members to be the members of the Mysore Agricultural and Experimental Union. They shall have all the rights and privileges of the members of the Union except supply of copies of the Journal. Two copies of the Union Journal for the whole year, both English and Kannada, shall be sent to the affiliated association.	Each affiliated association may delegate one of its members to be the member of the Mysore Agricultural and Experimental Union. He shall have all the rights and privileges of the members of the Union except supplies of copies of the Journal. One copy each of the Union Journal for the whole year, both English and Kannada, shall be sent to the affiliated association.
(5) Each affiliated association shall have the right to send two more delegates to the Union and obtain two more copies of the Union Journals for every extra ten rupees of its annual contribution.	Each affiliated association shall have the right to send one more delegate to the Union and obtain one more copy each of the Union Journals for every extra five rupees of its annual contribution.

Mr. H. M. Venkatachaliah, Landlord, Hoskote, brought up two resolutions which were passed as follows:—

(1) Supply of iron implements, etc.—

"*Resolved* that authorities be requested that larger supplies of iron implements may be made to the Agricultural Department to enable them to stock larger quantities in the depots."

(2) Constituting a new Agricultural Range at Hoskote—

"*Resolved* that the General Body of the Union recommends unanimously the formation of a new Agricultural Range at Hoskote."

Mr. S. L. Narasimhiah then brought up a few resolutions of which the following were passed:—

(1) "*Resolved* that the Government be requested to pass orders that all correspondence of the Union addressed to members or otherwise be posted on 'Service Unpaid'."

(2) "*Resolved* that the Director of Agriculture be requested to start a larger number of Subvention Farms on the holdings of the Union members."

Mr. S. L. Narasimhiah and Mr. R. Dasappa of Reddihally, together brought up a resolution which was passed as follows:—

"*Resolved* that the Government be moved to allot a seat in the Representative Assembly to a non-official member of the Experimental Union."

Mr. Revanna, Patel and Chairman, Mahadevapura, Nelamangala Taluk, had sent two resolutions of which one was passed as follows:—

"*Resolved* that the publication of the Agricultural Calendar be continued as it contains useful information regarding the campaign of 'Grow More Food', so essential at the present time."

Mr. R. Dasappa had another resolution to the effect that if any of the members of the Union desires to rear bees, he may be given a hive with bees initially at the concession rate of half the cost price.

"*Resolved* that it may be recommended to Government that one hive per member be given."

The following resolutions proposed by the Chair were passed unanimously:—

(1) "*Resolved* that the gratitude of the Members of the Mysore Agricultural and Experimental Union be conveyed to the Government of His Highness the Maharaja of Mysore for the continued patronage they have been extending to the Union and that a request be made for increasing the amount of subvention to Rs. 3,000 per annum for a period of five years so that the Union may cope up with its increased responsibilities."

(2) "*Resolved* that the gratitude of the members of the Mysore Agricultural and Experimental Union be conveyed to the Revenue Commissioner in Mysore for having recommended the Kannada *Journal* of the Union to all the Village Panchayats and a request be made to renew the recommendation in view of the fact that the number of Panchayats subscribing to the *Journal* has fallen."

(3) "*Resolved* that the Director of Public Instruction in Mysore be requested to kindly continue the patronage of the Education Department and recommend the Kannada *Journal* of the Union to all the Middle and Upper Primary Schools."

The General Body then proceeded to Elections.

Mr. M. J. Narasimhan, B.A., Officiating Director of Agriculture, was elected President.

Rajasevasakta B. Venkatanaranappa, M.A., was elected as Vice-President.

The following nine gentlemen were elected to the Committee by majority of votes:—

Mr. S. Venkataswami Gowda, Santehally, Malur.
„ S. L. Narasimhiah, Devanhally.
„ Shankararao Badami, M.A., Bangalore.
„ B. V. Venkatacharya, B.Sc. (Ag.), Alakere, Mandya.
„ S. G. Rangaswamy, L.Ag., Colonist, Maddur.
„ S. Srinivas, Bangalore.
„ P. K. Puttarajappa, Periyapatna.
Major C. B. Oakley, V.D., A.M.I.M.E., M.I.M., M.E., Bangalore.
Mr. G. Venkataramanayya, Bangalore.

It was resolved that Mr. S. A. Gangadhara Sastry be elected Auditor for 1942-43.

Mr. S. D. Achar said he would resign his place in view of his retirement. It was noted that his successor should be addressed for the *ex-officio* place in due course.

Major C. B. Oakley, Mr. S. L. Narasimhiah and Rajasevasakta B. Venkatanaranappa spoke in appreciation of the retiring President, Rajasevaprasakta T. G. Rama Iyer. Rajasevaprasakta T. G. Rama Iyer reviewed the progress of Agriculture in recent years specially mentioning the necessity for carrying the results of research to the raiyats' doors and how the food production drive had a call for the Agricultural Department.

The meeting terminated with three cheers to His Highness the Maharaja of Mysore.

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